

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2000-122362

(43)Date of publication of application : 28.04.2000

(51)Int.Cl.

G03G 15/00

B41J 29/00

G03G 21/00

H04N 1/04

(21)Application number : 10-294838

(71)Applicant : TOSHIBA TEC CORP

(22)Date of filing : 16.10.1998

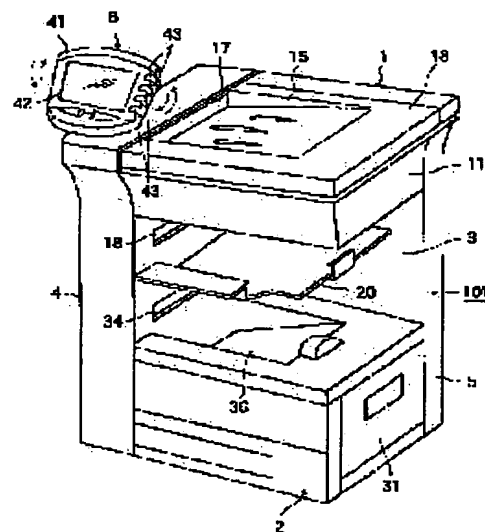
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## (54) IMAGE FORMING DEVICE

## (57)Abstract:

PROBLEM TO BE SOLVED: To enhance the operability of an image forming device by improving its structure provided with an operation body and display of an image forming device.

SOLUTION: This image forming device has a device body 101 provided with an original reading section 1 which places originals on an original platen, reads the information stated on the originals by moving a sensor, successively transports the originals and reads the images stated on the originals by the sensor, an image recording section 2 which successively transports recording paper and records the images based on image signals and an operation panel board 6 which has the operation body 43 for making the operation necessary for image formation as a separate body from this device body 101 and the display 42 for displaying the information necessary for image forming and is disposed at the device body 101 so as to be made changeable in the direction by turning and displacing around the perpendicular axis O. The operation panel board 6 is arranged on the upper side of the front surface part of the device body 101 and is held rotatably in this front surface part.



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**CLAIMS**

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[Claim(s)]

[Claim 1] The manuscript reading section which reads the image which carried out sequential conveyance of the manuscript and was indicated by the manuscript by the sensor while reading the information which laid the manuscript in the manuscript installation base, moved the sensor, and was indicated by the manuscript, And the body of equipment equipped with the image recording section which records the image based on the picture signal given by carrying out sequential conveyance of the recording paper, So that it may have the display object which displays this body of equipment, and information required for the actuation object and image formation which make another object and perform actuation required for image formation, and rotation displacement may be carried out a core [ a perpendicular axis ] and the sense can be changed Image formation equipment characterized by providing the control-panel board prepared in said body of equipment.

[Claim 2] Said control-panel board is image formation equipment characterized by being arranged at the top-face section bottom of said body of equipment, and being held pivotable at this top-face section.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to image formation equipments, such as facsimile apparatus and copy equipment.

[0002]

[Description of the Prior Art] For example, the copy equipment which is one of the image formation equipment is equipped with the manuscript read station which reads the information indicated by the manuscript, and the image recording section which records an image on the recording paper based on the signal which this manuscript read station read, and this image recording section is usually prepared in the manuscript read station bottom. The manuscript read station has the quiescence manuscript read means (flat-surface scanner ability) and the conveyance manuscript read means. A quiescence manuscript read means It has the sensor which reads the information which moved along with the transparent manuscript installation base which stands it still and arranges a manuscript, the original cover plate which presses down from the bottom the manuscript laid on this manuscript installation base, and the manuscript which was prepared in the manuscript installation \*\*\*\*\* bottom and laid on the manuscript installation base, and was indicated by the manuscript. It has the manuscript conveyance device which carries out sequential conveyance of the manuscript with which laminating arrangement of the manuscript installation section which a conveyance manuscript read means is formed in the top-face section of an original-cover plate, and carries out laminating installation of the manuscript, and this manuscript installation section was carried out, and discharges to the original-cover plate or body side of copy equipment, and the information on the manuscript which make this sensor stand it still and is conveyed is making a sensor read using the sensor of a quiescence manuscript read means.

[0003] Moreover, facsimile apparatus is equipped with the conveyance manuscript read station which does sequential conveyance of the manuscript to transmit and performs read of a manuscript, and the image recording section which records an image on the recording paper based on the received picture signal.

[0004] In image formation equipments, such as such copy equipment and facsimile apparatus, in order to perform manuscript read actuation and image recording equipment, it is necessary to establish the actuation object which sets up these various actuation, and the display object which displays the contents of the actuation set up with this actuation object, and the drive situation of equipment.

[0005] In order to establish these actuation object and a display object, with conventional image formation equipment, an actuation object and a display object are arranged in the part which serves as a front flank of the body of equipment in the top-face section of the body of equipment, and the configuration incorporated and prepared in one is adopted. That is, this configuration builds into the top-face section of the body of equipment at one the control panel which consists of an actuation object and a display object by building an actuation object and a display object into the interior of the top-face section of the body of equipment of image formation equipment, and arranging the plate which constitutes the top-face section of the body of equipment on that outside.

[0006]

[Problem(s) to be Solved by the Invention] However, the problem which describes below that an actuation object and a display object are the configuration included in the top-face section of the body of equipment at one in this way occurs. That is, when for this reason stand a manuscript still with a quiescence manuscript read means ( flat surface scanner ability) in the manuscript reading section and read that information, it may arrange

to the sense which read and be easy to carry out a manuscript according to the class of manuscripts, such as a drawing, a magazine, and a thick lexicon, and an operator may also change the location and sense to the body of equipment according to the sense of this manuscript. However, with conventional image formation equipment, the actuation object and the display object are prepared in the location which included in one and was fixed to the top-face section of the body of equipment, and, for this reason, cannot change that arrangement sense. For this reason, are hard an actuation object coming to operate it, and it is hard it coming for it to be satisfactory when an operator is located in the front flank by which an actuation object and a display object have been arranged to the body of equipment, but to check by looking, when it is in the location where an operator separated from an actuation object and a display object, and when it is in the sense toward which an operator inclined to an actuation object and a display object in the display of a display object good. Thus, since it is fixed to a fixed location and the actuation object and the display object are established conventionally, operability falls depending on an operator's location and sense.

[0007] moreover, when a manuscript be stand still in the manuscript reading section, the information be read (flat surface scanner) and a large-sized (for example, A1 size) manuscript be lay from this on the manuscript installation base established in the manuscript read station, the top face section of the body of equipment with which some manuscripts overflowing from a manuscript installation base incorporated the actuation object and the display object may be cover and hide from the bottom. In this case, since it is necessary to operate it by exposing the actuation object and display object which have turned over the large-sized manuscript which has covered the top-face section of the body of equipment incorporating an actuation object and a display object, and are in that bottom, operability falls.

[0008] Therefore, it is required that the operability for improving the structure of establishing an actuation object and a display object in image formation equipment from the former, and performing image formation should be raised.

[0009] It aims at offering the image formation equipment which solved the technical problem which raises the operability which this invention is made based on said situation, improves the structure of being a thing and establishing an actuation object and a display object, and performs image formation, and is demanded.

[0010] Furthermore, this invention aims at offering the image formation equipment which raised the operability in the case of standing a manuscript still and reading the information.

[0011]

[Means for Solving the Problem] The image formation equipment of invention of claim 1 While reading the information which laid the manuscript in the manuscript installation base, moved the sensor, and was indicated by the manuscript The body of equipment equipped with the image recording section which records the image based on the picture signal given by carrying out sequential conveyance of the manuscript reading section and the recording paper which read the image which carried out sequential conveyance of the manuscript and was indicated by the manuscript by the sensor, It is characterized by providing the control-panel board prepared in said body of equipment so that it might have the display object which displays this body of equipment, and information required for the actuation object and image formation which make another object and perform actuation required for image formation, and rotation displacement might be carried out a core [ a perpendicular axis ] and the sense could be changed.

[0012] Since according to the configuration of this invention an operator can do rotation displacement a core [ a perpendicular axis ] and can set the control-panel board as the optimal sense according to an own location and the own sense, the operability which performs image formation can be raised.

[0013] Invention of claim 2 is characterized by arranging said control-panel board at the top-face section bottom of said body of equipment, and holding it pivotable at this top-face section in image formation equipment according to claim 1.

[0014] According to the configuration of this invention, since the control-panel board is located above the top-face section of the body of equipment in addition to an operation of invention of claim 1, when performing read of the manuscript of large size, even if some manuscripts overflow a manuscript installation base, an actuation object and a display object are not covered with a manuscript.

[0015]

[Embodiment of the Invention] The gestalt of 1 operation of this invention is explained with reference to drawing 1 R> 1 thru/or drawing 7 . The gestalt of this operation applies this invention to the image formation

equipment of the compound die which packed facsimile apparatus, copy equipment, and printer equipment into one.

[0016] For the perspective view in which drawing 1 shows the image formation equipment of the gestalt of this operation, and drawing 2, this top view and drawing 3 are [ this end view and drawing 5 of this elevation and drawing 4 ] these top views. They are the top view which drawing 6 expands the maintenance structure of the control-panel board, and is shown, and the elevation which drawing 7 expands the maintenance structure of this control-panel board, and is shown.

[0017] It is the image recording section arranged by the manuscript reading section's being intervened between the true bottoms of the manuscript reading section 1 by one in drawing, and 2 intervening the space section 3. The combination structure with which 4 combines the end section of the manuscript reading section 1 and the end section of the image recording section 2 in the vertical direction, and 5 are the auxiliary combination structures which combine [ the edge to which the end section and the other end in the manuscript reading section 1 and the image recording section 2 are connected ] an edge for a flank in the vertical direction. The space section 3 is inserted in the upper manuscript reading section 1 and the lower image recording section 2, and the lateral portion is further covered by the combination structure 4 and the auxiliary combination structure 5. 6 is the control-panel board.

[0018] The manuscript reading section 1 is making the configuration described below. 11 is the case where a square is made, this is arranged horizontally and the manuscript installation base 12 (refer to drawing 2 and drawing 4) where the end section is attached in the upper limit section of the combination structure 4, and turns into the top-face disconnection section from the level transparence plate which lays manuscripts, such as books which cannot be conveyed, is formed. 13 is an original cover plate, and this is pivoted with the pivoting implement 14 (refer to drawing 2) by the side edge which meets in the direction to which the end section and the other end in a case 11 are connected, and it can rotate now between the standing-up locations which open a wrap horizontal position and the manuscript installation base 12 for the manuscript installation base 12. From the other end side of the original cover plate 13, it inclines and the manuscript installation section 15 which carries out the laminating of the manuscript G which consists of a cut sheet, and lays it is formed in the top-face section of the original cover plate 13 so that it may become low towards an end side. The electrical circuit (not shown) which changes into an electrical signal the image of the manuscript G with which the drive (not shown) which carries out both-way migration of between the end section of a case 11 and the other end, and the sensor 16 read the sensor 16 of the Rhine mold which reads the image indicated by the manuscript, and this sensor 16 is established in the interior of a case 11. When the original cover plate 13 covers in the space lateral portion in the upper limit section of the combination structure 4 and it is in a location, the manuscript inlet port 17 is formed in the location which counters the manuscript installation section 15. Moreover, it is located in the case 11 bottom and the manuscript outlet 18 is formed in the space lateral portion in the combination structure 4. The manuscript conveyance device 19 which draws the manuscript G by which laminating installation was carried out one by one from the manuscript inlet port 17 in the manuscript installation section 15 of the original cover plate 13, and is discharged towards the space section 3 from the manuscript outlet 18 is formed in the interior in the upper limit section of the combination structure 4. The paper output tray 20 which receives the manuscript G discharged towards the space section 3 from the manuscript outlet 18 is formed in the space section 3 formed between the manuscript reading section 1 and the image recording section 2.

[0019] And when reading by conveying Manuscript G, one flank of a case 11 is made to suspend a sensor 16 in this manuscript reading section 1. The laminating of the manuscript is carried out to the manuscript installation section 15 of the original cover plate 13, and it is laid in it. The manuscript G by which drove the manuscript conveyance device 19 and laminating installation was carried out at the manuscript installation section 15 of the original cover plate 13 is drawn one by one from the manuscript inlet port 17, and is conveyed towards the manuscript outlet 18. The image with which the sensor 16 was indicated by Manuscript P in this process is read. Manuscript G is discharged from the manuscript outlet 18 to the space section 3, is caught by the top face of a paper output tray 20 established in the space section 3, and appears in it. Thus, the laminating of the manuscript G which reading was performed and was discharged from the manuscript outlet 18 is carried out on a paper output tray 20 one by one. A user takes out the manuscript G currently laid on the paper output tray 20 from the open part of the space section 3.

[0020] Moreover, in reading books etc., books are carried on the manuscript installation base 12, and it presses

down with the original cover plate 13, and the between to the other end is moved and it reads a sensor 16 in the end section of a case.

[0021] The image recording section 2 is constituted so that it may state below. 31 in drawing is a case and this is attached in the lower limit section of the combination structure 4. It is arranged at this recording paper cassette [ which carries out the laminating of the recording paper P, and holds it ] 32, and recording paper cassette 32 bottom, and the image recording device 33 which records an image with an electrophotography method based on a picture signal is formed in the interior of a case 31, picking-taking out the recording paper P one by one, and conveying it from the recording paper cassette 32. It is located in the space section side face in the combination structure 4 above a case 31, and the recording paper outlet 34 is formed. The conveyance device 35 which conveys the recording paper P which had the image recorded according to the image recording device 33 by the interior of the combination structure 4, and is discharged from the recording paper outlet 34 to the exterior is established. The recording paper receptacle section 36 (refer to drawing 1 ) which carries out a laminating one by one in response to the recording paper P discharged from the recording paper outlet 34 is formed in the top-face section of a case 31.

[0022] Thus, in the constituted image formation equipment, the manuscript reading section 1 achieves the function of the manuscript reading section in copy equipment, and the manuscript reading section for transmission in facsimile apparatus. The image recording section 2 achieves the image recording section which records an image on the recording paper in response to the picture signal from the manuscript reading section 1 in copy equipment, the image recording section which records the picture signal which came from the telephone line in facsimile apparatus on the recording paper, and the function of printer equipment.

[0023] In addition, in addition to the case 11 of the manuscript reading section 1, and the case 31 of the image recording section 2, the body 101 of equipment of image formation equipment is constituted by the combination structure 4 and the auxiliary combination structure 5. And the flank in which the open part of the space section 3 which adjoins the combination structure 4 and is opened is located is made into the front flank of the body 101 of equipment which is the side to which an operator operates it by being located ahead, and this flank and the flank of the opposite side which counters are made into the back flank. the original cover plate 13 -- the back flank of the body 101 of equipment -- supporting pivotably -- a front flank disconnection-side -- carrying out -- the vertical direction -- it has prepared rotatable.

[0024] The control-panel board 6 is for an operator to perform actuation required for image formation, and is arranged at the front flank bottom of the top-face section of the combination structure 4 which is the body 101 of equipment. The top-face section of the combination structure 4 is a part contiguous to the manuscript outlet of the manuscript installation section 15 in the original cover plate 13 formed in the manuscript reading section 1. That is, the control-panel board 6 is arranged at the front flank bottom which approached the manuscript reading section 1 in the top-face section of the body 101 of equipment, and when an operator stands on a before [ the front flank of the body 101 of equipment ] side and operates it using the control-panel board 6, the control-panel board 6 is arranged in the location which is easy to operate it for an operator.

[0025] The control-panel board 6 incorporates the display object 42 which displays information required for image formation on the center section of the thin case 41 and which consists of a liquid crystal display panel, for example so that it may expand to drawing 6 and drawing 7 and may be shown, and it forms two or more actuation objects 43 which perform actuation required for image formation in the side of this display object 42. The display object 42 can be seen from the front section of a case 41, and the actuation object 43 is formed in the front section of a case 41 including a various key and various switches, such as a push button mold key, a touch switch, and a seesaw mold switch. The control-panel board 6 is formed so that the perpendicular axis O can be rotated as a core in the top-face section of the combination structure 4 by the supporter 44, as shown in drawing 7 . A supporter 44 is what formed in one attaching part 44a holding the control-panel board 6, rotation rest 44b which makes the perfect circle located in the lower part of this attaching part 44a, and rotation shank 44c which makes the perfect circle located in the lower part of this rotation rest 44b, and rotation rest 44b and rotation shank 44c are formed considering the same perpendicular axis O as a core. Here, the perpendicular axis O which holds the control-panel board 6 and serves as the rotation supporting point as shown in drawing 2 , drawing 3 , drawing 5 , and drawing 6 is set as the location (near) which approached the manuscript read station 1 side (original cover covering 13 side) rather than the die-length direction core in the die-length direction ( drawing 2 , longitudinal direction of drawing 3 ) of a case 41.

[0026] Moreover, \*\*\*\*\* 45a which has the magnitude corresponding to rotation rest 44b is formed, bearing hole 45a which has the magnitude corresponding to rotation shank 44c is formed in the lower part of this \*\*\*\*\* 45a, and these \*\*\*\*\* 45a and bearing hole 45b are formed in the control-panel board arrangement part in the top-face section of the combination structure 4 considering the same perpendicular axis O as a core. And fitting of the rotation of rotation rest 44b of a supporter 44 is made free to \*\*\*\*\* 45a of the top-face section of the combination structure 4, fitting of the rotation of rotation shank 44c is made free to bearing hole 45b, and attaching part 44a is projected from the top-face section of the combination structure 4 to the bottom. For this reason, the supporter 44 is formed so that the perpendicular axis O may be made rotatable as a core and the sense can be changed into the top-face section of the combination structure 4 to all the range of 360 degrees. The rotation section which is two pieces from which a diameter differs in a supporter 44 is prepared for being stabilized, holding a supporter 44 and rotating.

[0027] In addition, so that it may not rotate indiscriminately from the sense which the control-panel board 6 has stopped by the force when an operator pushes the actuation object 43 Make harder fitting with rotation rest 44b of a supporter 44 and rotation shank 44c, \*\*\*\*\*45a of the combination structure 4, and bearing hole 45b. or rotation rest 44b of a supporter 44 and rotation shank 44c, and \*\*\*\*\*45a of the combination structure 4 -- reaching -- it is desirable to adopt the configuration of preparing a click stop device in the a large number part of the circumferencial direction in the fitting section with bearing hole 45a, respectively.

[0028] And the rear-face section of the control-panel board 6 is held at attaching part 44a of a supporter 44. the control-panel board 6 -- fundamental -- the display object 42 -- a top -- turning -- a predetermined include angle -- having -- being backward (turning to the perpendicular axis O) -- it fell -- it is suitable, and it comes out and is held at attaching part 44a. Moreover, the control-panel board 6 is formed so that the horizontal-axis line Q may be rotated in a direction in the rotation range of an include angle proper as a core according to the proper inclination rotation support device 47 and an elevation angle can be adjusted.

[0029] When an operator operates it by standing on a before [ the front flank of the body 101 of equipment ] side, this control-panel board 6 adjusts the sense so that it may become the suitable sense for an operator. That is, when standing a manuscript still, for example in the manuscript reading section and reading that information (flat-surface scanner), it may arrange to the sense which read and be easy to carry out a manuscript according to the class of manuscripts, such as a drawing, a magazine, and a thick lexicon, and an operator may also change the location and sense to the body 101 of equipment according to the sense of this manuscript. In this case, it is necessary to adjust the sense for the location which is easy to operate the actuation object 43 and the display object 42 for an operator according to an operator's sense. Then, an operator has the control-panel board 6 by hand, rotates the perpendicular axis O as a core, and adjusts the control-panel board 6 to the required sense.

[0030] For example, when the operator is facing each other and standing on the combination structure 4 in the before [ the combination structure 4 in the body 101 of equipment ] side, the sense is adjusted so that it may become parallel to the side side of the front flank of the body 101 of equipment about the control-panel board 6, as shown in drawing 1 thru/or drawing 5 . In this case, the actuation object 43 and the display object 42 which were prepared in the control-panel board 6 are located in the side side of the front flank of the body 101 of equipment, and parallel. For this reason, the operator located in a before [ the body 101 of equipment ] side can check the display of the display object 42 by looking it is reasonable and good while being able to operate easily [ it is reasonable and ] the actuation object 43 prepared in the control panel 6.

[0031] Moreover, when [ of the manuscript reading section / in / in an operator / the body 101 of equipment / 1 ] it faces each other and is standing on this case 11 by the before [ the center of anterior part of a case 11 ] side While the control-panel board 6 can be turned and rotated to an operator and an operator can operate the actuation object 43 easily [ it is reasonable and ] as shown in the top view of drawing 5 since an operator and the control-panel board 6 are a little separated The display of the display object 42 is adjusted to the sense which can be checked by looking it is reasonable and good.

[0032] Thus, the operability which sets it as the optimal sense according to an own location and the own sense when an operator does rotation displacement of the control-panel board 6 a core [ the perpendicular axis O ] and performs image formation actuation, and performs image formation can be raised.

[0033] Here, the perpendicular axis O which holds the control-panel board 6 and serves as the rotation supporting point is set as the location (near) which approached the manuscript read station 1 side (original cover covering 13 side) rather than the die-length direction core in the die-length direction ( drawing 2 , longitudinal

direction of drawing 3 ) of a case 41. For this reason, effectiveness which a degree describes can be acquired. When the operator is facing each other and standing on this case 11 by the before [ the center of anterior part of the case 11 of the manuscript reading section 1 in the body 101 of equipment ] side, generally the control-panel board 6 is rotated with the edge (edge on the left-hand side of illustration) of the outside approach of the case 41 of the control-panel board 6. In this case, since the perpendicular axis O used as the rotation supporting point is in the location which approached the manuscript read station 1 side, the distance between the perpendicular axis O and the edge (edge on the left-hand side of illustration) of the outside approach of a case 41 is longer than the distance between the perpendicular axis O and the edge (edge on the right-hand side of illustration) of the inside approach of a case 41. For this reason, an operator can rotate the control-panel board 6 lightly and easily. Moreover, since the perpendicular axis O is in the location which approached the manuscript read station 1 side when rotating the control-panel board 6 in the direction which intersects perpendicularly to the illustration longitudinal direction of the manuscript reading section 1, it is very convenient after operating it, since it is located in the location where the control-panel board 6 also approached the manuscript read station 1 side, i.e., the location near an operator. Furthermore, since the distance between the perpendicular axis O and the edge (edge on the right-hand side of illustration) of the inside approach of a case 41 is short, in case the control-panel board 6 is rotated, from the perpendicular axis O in a case 41, the original cover plate 13 bottom which the part by the side of the manuscript read station 1 prepared for the manuscript read station 1 is resembled, and this thing cannot be found. For this reason, the control-panel board 6 does not check vertical rotation of the original cover plate 13.

[0034] Moreover, since the control-panel board 6 inclines so that the front section which established the display object 42 and the actuation object 43 may be made into a before side and it may fall backward When an operator looks at the control-panel board 6 by the look from a location higher than the control-panel board 6 The display object 42 and the actuation object 43 can check the display of the display object 42 by looking it is reasonable and good, while it is in very legible location and include angle and an operator can operate the actuation object 43 easily [ it is reasonable and ] from an operator. Since the control-panel board 6 can adjust the elevation angle, it can be adjusted to the sense with the much more suitable elevation angle for an operator.

[0035] Furthermore, since the control-panel board 6 is arranged on the top face of the combination structure 4 When standing a manuscript still in the manuscript reading section 1 and reading information (flat-surface scanner) As shown in drawing 2 , when the manuscript Ga of larger size (for example, A1 size) than this is laid on the manuscript installation base 12 established in the manuscript read station 1 Cover the top-face section of the body of equipment with which some manuscripts overflowing from the manuscript installation base 12 incorporated the actuation object and the display object, and it is not hidden from the bottom. Therefore, even when reading by laying the manuscript of oban size, it can avoid checking actuation of the actuation object 43 and the display of the display object 42.

[0036] In addition, this invention is not limited to the gestalt of operation mentioned above, but can be carried out with the gestalt from which versatility differs. This invention can be widely applied to copy equipment, facsimile apparatus, etc., without being limited to compound-die image formation equipment.

[0037]

[Effect of the Invention] Since according to the image formation equipment of invention of claim 1 an operator can do rotation displacement a core [ a perpendicular axis ] and can set the control-panel board as the optimal sense according to an own location and the own sense, the operability which performs image formation can be raised.

[0038] According to invention of claim 2, even if some manuscripts overflow a manuscript installation base when performing read of the manuscript of large size since the control-panel board is located above the top-face section of the body of equipment, an actuation object and a display object are not covered with a manuscript, and the operability in manuscript reading can be raised.

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[Translation done.]



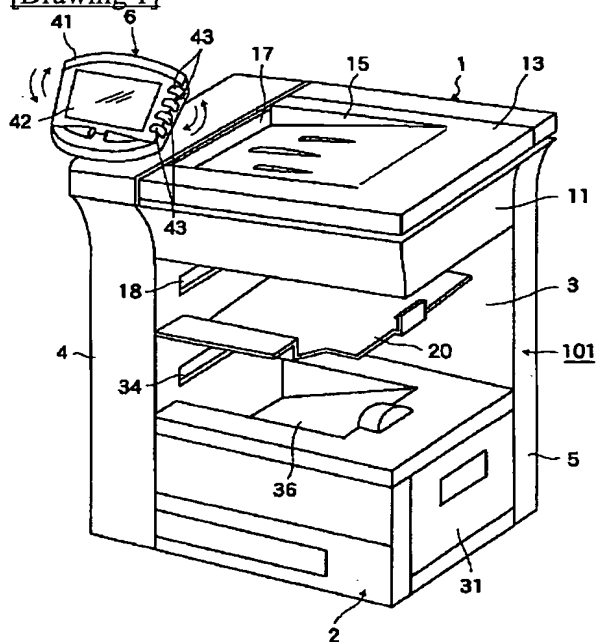
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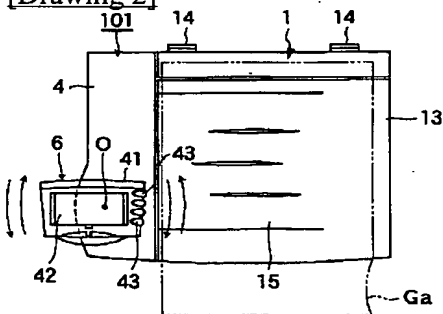
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## DRAWINGS

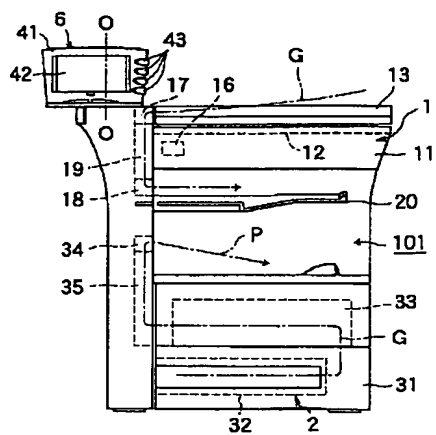
[Drawing 1]



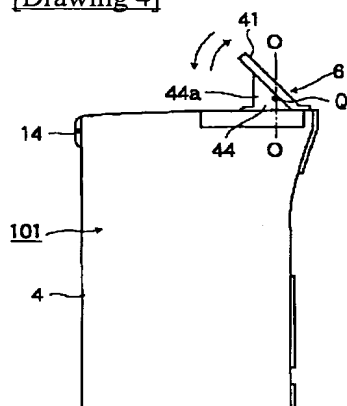
[Drawing 2]



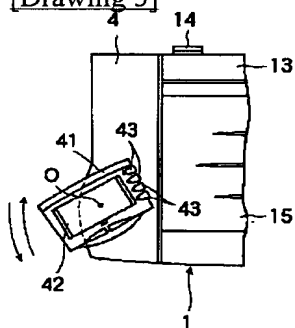
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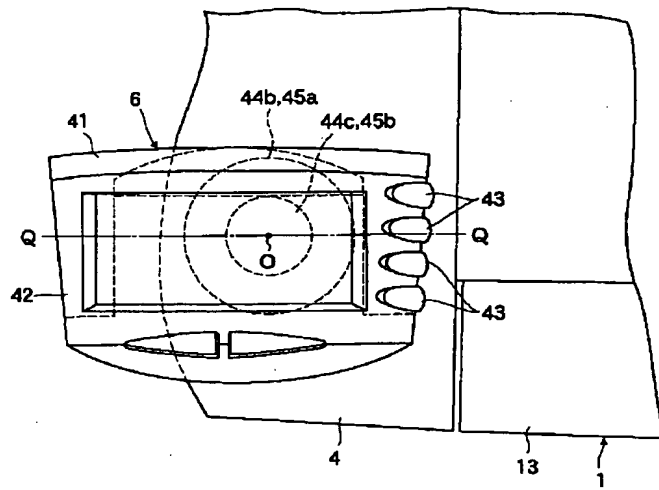
[Drawing 4]



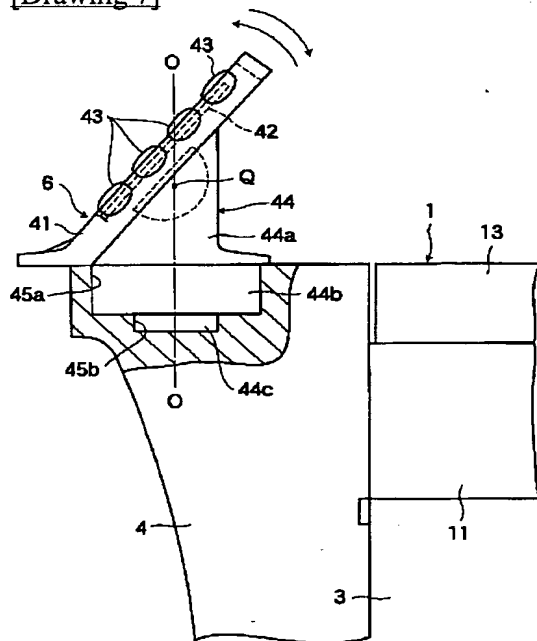
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]